

CLAIMS

1. A testing device for detecting and localising material inhomogeneities in electrically conductive samples, comprising a holder for the sample to be tested;

a temperature setting device for forming a temperature profile in the sample;

a drive connected to the holder, for the position change of the sample;

at least one measuring sensor for the contactless measurement of the magnetic field outside the sample.
2. A testing device according to claim 1, wherein the temperature setting device sets a temperature gradient in the sample.
3. A testing device according to claim 1, wherein the temperature setting device sets a temperature profile in the sample which has a homogeneous, location-dependent constant temperature.
4. A testing device according to one of the preceding claims, wherein the temperature setting device is connected to the measuring sensor.
5. A testing device according to one of the preceding claims, wherein the holder is connected to the temperature setting device.
6. A testing device according to one of the preceding claims, wherein the measuring probe is movably or displaceably arranged.
7. A testing device according to one of the preceding claims, wherein the measuring sensor comprises a SQUID magnetometer.
8. A testing device according to one of the preceding claims, wherein the measuring sensor comprises a SQUID gradiometer.

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9. A method for detecting and localising material inhomogeneities in electrically conductive samples, wherein the sample is brought to a predetermined temperature profile and the magnetic field outside the sample is measured.

10. A method according to claim 9, wherein the temperature profile has a temperature gradient.

11. A method according to claim 9 or 10, wherein from the polarity of the measuring signal and the direction of the temperature gradient one infers the type of inhomogeneity.

12. A method according to one of the claims 9 to 11, wherein for the improved localization and shape determination of the inhomogeneity, in subsequent measurements the temperature profile in the sample is differently set.

13. A method according to one of the claims 9 to 11, wherein the depth detection of the inhomogeneity is effected in that in subsequent measurements one measures at different distances to the sample.

14. A method according to one of the claims 9 to 11, wherein the depth detection of the inhomogeneity is effected in that with several measuring probes one simultaneously measures at different distances to the sample.

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